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FOREST PLANTING LEAFLET.

EUROPEAN LARCH (Larix europæa).

FORM AND SIZE.

The European larch is a deciduous conifer, similar in form and size to our native tamarack. The long, thin fringed, spire-like crown is very characteristic. When grown in the forest the bole is very straight and clean and the crown greatly reduced in size. The tree is of medium proportions, but occasionally reaches a height of 80 to 100 feet and a diameter of 2 to 3 feet.

RANGE.

The European larch is not indigenous to the United States. Its natural range is confined to a somewhat limited region in central Europe, where it grows best on the fresh soils of the lower mountain slopes. It has been widely planted abroad, and was introduced into England as early as 1629.

In the United States small plantations have been made from New England to South Dakota. The exact limits of the region in which planting is advisable can not be given, but it is evident that commercial plantations may be established throughout the Northeastern States and westward through the Central and Lake States to South Dakota and the prairie region. In Iowa, eastern Kansas, and Nebraska, European larch is, when planted in suitable situations, among the most promising of our conifers.

HABITS AND GROWTH.

The larch requires favorable soil conditions. The soil should be deep, light, moderately fertile, and fresh, but well drained both in the upper layer and in the subsoil. This tree possesses a deep root system like that of Scotch pine and oak. When the land is wet the tree may start vigorously, but it will soon become spongy at the base and rot. It will grow on comparatively poor but not on sterile soil.

The species is distinctly intolerant, demanding more light than any other of our conifers and equaling in this respect our most intolerant hardwoods, such as aspen and locust. In its natural state it is never found in pure stands, occurring only in small groups or as isolated individuals among more shade-enduring species.

The larch grows faster than most species. It is one of the most desirable trees for planting in the eastern and central parts of the United States.

Several years ago the larvæ of a sawfly almost entirely killed the native tamarack of the Northeast, and young trees are still seriously injured by insects. As yet no serious damage by the insect has been reported from plantations of the European species in the West, but the small plats which exist in New England have been badly injured and in some cases nearly destroyed by insect pests. On low ground a fungus known as *Trametes pini* often attacks the larch and so destroys the substance of the wood that the tree breaks down in even a slight wind. In Europe pure plantations often become the prey of the fungus.

ECONOMIC USES.

The wood of the larch is heavy, hard, strong, flexible, and very durable in contact with the ground. When grown on good soil it is yellowish white, but in cold, elevated situations it is reddish-brown and much harder. Because of its strength and durability it is very valuable for poles, posts, cross-ties, etc., and is largely used in shipbuilding.

METHODS OF PROPAGATION.

The larch reproduces entirely by seed. It is best propagated by transplanting 2-year-old nursery-grown seedlings or transplants to the plantation. The seeds are borne abundantly in small, upright cones, and are easily collected. Care, however, should be taken in collecting them, for the old, seedless cones, which remain for three or four years, are easily mistaken for new ones. The number of trees in this country that have reached fruiting age is limited, and it is often necessary to use imported seeds, which may be obtained direct from foreign dealers or through the larger home seedsmen.

Although a deciduous tree, the larch is a conifer and should be treated as such in all nursery and planting operations. Nursery culture is simple and should be conducted according to the general rules given in "How to Grow Young Trees for Forest Planting," an article issued as Extract 376 from the Yearbook of the Department of Agriculture for 1905. Nursery seed beds should be prepared in moist loam and the seeds sown in shallow drills 6 inches apart and lightly covered with fine dirt. Partial protection from the sun and beating rain should be given the young seedlings for the first two years. For this purpose the common lath screen described in the bulletin mentioned is simplest. One pound of seed, containing 72,000 seeds, is sufficient to plant 400 feet of seed drills, and will produce about 25,000 plants. These will occupy about 250 square feet of nursery space.

PLANTING.

Seedlings may be planted when 2 years old. The planting should be done very early in the spring, as the buds start early. The trees should be placed from 4 to 6 feet apart each way, according to local conditions. In the Middle West the narrower spacing is preferable. In prairie planting the soil should be thoroughly prepared, but in the East such preparation is not necessary.

Mixed plantations are most desirable, since European experience shows that pure plantations of larch do not thrive for any length of time. The larch may be planted to advantage with the following species: Chestnut, white and green ash, white and slippery elm, Scotch pine, red pine, white pine, Norway spruce, and red cedar. Often three or four of these species may be advantageously combined, as the European larch, white elm, white ash, red cedar, or white pine. In such mixtures, however, considerable care and skill are required in the thinnings, and simpler combinations are usually preferable. Chestnut and larch, and red and white pine and larch, make admirable mixtures for planting on a large scale. In such mixtures the larch should be in the proportion of one to three or more.

Because of the imperious demand of the larch for light, pure stands are decidedly unsafe; the tops demand considerable growing space, and the weaker trees die out to such an extent as to expose the soil and impair forest conditions. Furthermore, pure forests are much more liable to serious insect damages.

CULTIVATION AND CARE.

In the prairie region forest plantations of European larch should be thoroughly cultivated until the trees are able to compete successfully with encroaching grasses. In the East cultivation after planting is not required.

Plantations should receive full protection against fire and stock. Any serious damage from insects or fungi should be reported and specimens sent to the Bureau of Entomology, Department of Agriculture, for suggestion as to method of control.

Approved:
James Wilson,
Secretary of Agriculture.

Washington, D. C., *August 2, 1909.*

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